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> The Editor's Podiumâ €

Atari is alive and well, the market action speaks for itself. The new products have created a flurry of interest along with a respectable amount of used equipment being for sale. Sure, some folks are headed in other directions, but at the same time there are many who are upgrading to either the Mega STe or the TT030. The software authors are sure to see an surge of sales from the new owners of the used gear and then, once the Mega STe hits the dealer's shelves.... up and away we go!

On another note, we find that the dumb rumors circulating throughout the Atari community have reached a new low... Elsewhere in this issue we address the 'nasty rumor' and 'old rumor' departments. For now, please allow me on behalf of our entire staff and its newest member Brad Martin, to wish everyone a....

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WHAT'S NEW IN THE ATARI FORUMS (Dec. 28)

COMMODORE 64 EMULATOR FROM GERMANY

Miguel R. Silva has uploaded the Commodore 64 Emulator from Germany

(written in 1987). Please see file C64.PRG in LIBRARY 1 of the Atari Productivity Forum (GO ATARIPRO).

NEW VERSION OF QUICKCIS

Version 1.60A of Jim Ness' popular QuickCIS program is available in

LIBRARY 1 of the Atari Productivity Forum as QWKCIS.ARC. QuickCIS is a CompuServe navigator. It will automatically call, capture email, visit up to 6 forums, and log off. While in forums, it can capture messages, post your own messages, and download chosen files from forum libraries.

ST REPORT LISTS ATARI SOURCES

An up-to-date listing of sources for Atari software and hardware is available courtesy of ST REPORT as LIST.TXT in LIBRARY 1 of the Atari Arts Forum (GO ATARIARTS).

NEW FILES IN VENDORS FORUM

DCDAUT.ARC is now available in LIBRARY 13 of the Atari Vendors Forum (GO ATARIVEN) courtesy of Double Click Software. DC DESKTOP AUTO is a SIGNIFICANT enhancement for the DC Desktop! DC DESKTOP AUTO SELECTOR v1.0 allows you to organize your DC Desktop bootup. Simply copy all of your DC Desktop programs from the AUTO folder to the DC Desktop Information directory. When DCD AUTO runs from the AUTO folder, you get a graphical interface to choose programs, presets, bootup resolution, and CABINETS!

ISD Marketing has uploaded the text of their latest customer mail out to registered Calamus owners containing some limited time offers and information on the status of Calamus SL. See the file CUSUPD.TXT in LIBRARY 17 of the Atari Vendors Forum (GO ATARIVEN).

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> CPU REPORTâ €
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Issue # 97

by Michael Arthur

CPU INSIGHTSâ €
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AN ODE TO THE INS AND OUTS OF MULTITASKING

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Part II

In Part I of this series, we explored the various tasks that a multitasking OS performs, while showing some aspects of the many possible capabilities of multitasking systems. In this segment, let us explore some of the ways that multitasking can be implemented, and show some of the extra features in some systems that help make multitasking more efficient.

The key component in a multitasking system is the way it divides the computer's CPU time between the tasks currently running on it. One aspect of this, the various functions and jobs of a multitasking system, has been discussed. Now I will explore the methods that multitasking systems use to perform their tasks. Even though there are many ways of distributing CPU time between all running processes, there are two distinct methods of doing this: Cooperative scheduling, and preemptive scheduling.

Cooperative Multitasking

In cooperative (or nonpreemptive) scheduling, it is the tasks running on the system, not the OS itself, that control the multitasking process. When a task is given the CPU, it gains sole usage of the system until it decides to relinquish control to another task. There are a couple of advantages to this method. An application can complete some vital tasks immediately, then allow the others to run in the background, and a program in a cooperative system can do certain things (such as controlling events and peripherals that function in real-time) more efficiently than otherwise possible in a multitasking system. But there are many disadvantages to cooperative scheduling, which have kept this system from being used as widely as preemptive multitasking.

For one thing, cooperative scheduling requires that all programs be VERY well behaved. If a task holds up the CPU for too long, even while doing an important job, response time will suffer greatly. But even more seriously, if a task doesn't relinquish control of the CPU or a system resource (due to a software bug), other programs that need those resources won't be able to function, causing a situation, called deadlock, which can halt those tasks, or even crash the multitasking system itself.

Preemptive Multitasking

But while cooperative scheduling does not seem like multitasking, at least in the standard sense, preemptive scheduling closely follows the strict definition of multitasking. In this type of system, a task is not guaranteed sole usage of the CPU for a certain amount of time, but rather, can lose it at any time, so another task can run. Because a running task doesn't need to know this is occurring, and since a multitasking system is supposed to do its job as transparently as possible, the OS usually makes each individual task think it is the only one using the system. Although there are many ways of implementing preemptive schedulers, practically all of them are based on two schemes: round-robin, and priority-based

scheduling.

A round-robin scheduler simply makes the tasks take turns, giving each task an equal amount of CPU time in which to run. This type of scheduler is VERY easy to implement, and guarantees that all tasks will get a certain amount of CPU time. But often programs running on a system do not need the same amount of CPU time at all instances (such as a word processor and a spreadsheet), and giving CPU time to tasks that don't need it is NOT efficient at all.

Priority-based schedulers help to solve this dilemma. In this situation, each program is given a priority level, according to how CPU intensive (like a spreadsheet recalculation) or time critical (like a file transfer from a BBS) a task is, or how quickly it interacts with the user (such as a game, or a program in the foreground). The scheduler then distributes CPU time to each task according to how high its priority level is, and the higher the priority level, the more CPU time a particular task gets.

For example, if task A has a higher priority level than task B, then task A will get the CPU before B, and will be able to use it for a greater amount of time. But if both tasks have an equal priority level, then the system doles out CPU time in a round-robin fashion. Priority levels apply to all aspects of system operation, so if tasks A and B ask for use of a system resource, such as a printer, and task A has a higher priority level than B, task A would get that system resource (in this case, the printer) first. By the way, since the amount of CPU time needed by a program can vary, depending on the type of task it is performing, the scheduler can also adjust the priority level of a program as needed.

There are MANY advantages to preemptive scheduling, which have caused it to become standard procedure for most multitasking systems. Not only do preemptive systems have better tolerance of errors and ill-behaved programs than cooperative ones, as well as being less fragile, but many types of interprocess communication can only be used with it. The main disadvantage to preemptive schedulers as compared to cooperative ones is that they are a LOT harder to implement than cooperative schedulers. Also, they cannot know when is the optimal time for a task to relinquish the CPU as only the task itself could have this information. This often results in the program completing its tasks less efficiently than with a cooperative multitasker. Priority-based schedulers help to provide this "intelligent" switching for preemptive systems, though....

Problems, Problems, Problems

Although multitasking is a very useful, versatile, and powerful tool, with many integrated ways of preventing errors from occurring, problems inevitably arise, even in the best systems. We all know that in singletasking systems, there is always a chance that it will crash, at one point or another, as the job of an operating system isn't easy in the first place. But with the added strain of distributing system resources and CPU time between the many tasks that might be running, managing any interprocess communications between those tasks, and making sure that both occur as efficiently as possible, the problems that come with an ordinary operating system quickly multiply. Many of the utilities now associated with multitasking systems, such as virtual memory and Memory Management Units (MMU's), actually arose to solve these problems. Even though there are an infinite amount of problems waiting to happen in a multitasking

system, here are some of the most prevalent:

Deadlock:

In a multitasking operating system, whether it be cooperative or preemptive, tasks always compete for access to system resources. For Disk Access, this problem can be easily solved, but for other resources, such as printers or modems, multitaskers usually give one task sole access to a resource, forcing the other tasks that need it to wait until it is finished using it. Since these other tasks often are also holding resources, which are also locked up until the task can continue operation, this can cause quite a traffic jam, as all tasks slow to a halt as they wait for the others to relinquish their resources. This complex situation is called deadlock.

For instance, let's say that Task A is using System Resource 1 to do its work, while Task B is using Resource 2 to do its work. So that no other task can interfere with its work, Task A has a lock on Resource 1, while Task B has a lock on Resource 2. Now suppose that Task A needs Resource 2 to complete its task, while Task B needs Resource 1 for its duties. Since Task A cannot run until Task B gives up Resource 2, and Task B cannot run until Task A gives up Resource 1, and since both won't give up their resources, neither can proceed. As you can see, deadlock only happens when a task is allowed to hold onto resources it is not using at the time, so it would seem simple to make all tasks give up their resources after their CPU time is up. But if that resource happens to be a printer, and two tasks, a word processor and a spreadsheet, are trying to print on the same printer, if you allow BOTH of them to print at the same time....

So since it is necessary in some instances to allow tasks to monopolize system resources, then deadlock is not always preventable. In fact, since the overhead involved in making an operating system that made sure that deadlock never occurred (meaning that it would have to be prepared for ANY eventuality that could happen in multitasking systems), would be ENORMOUS, most multitaskers (including Unix) are able to kill off as many tasks as necessary to stop deadlock. Since one of the "unlucky" tasks could be something that was VERY important, like your 1040 IRS Tax Form, this is not always preferable. Barring this, the multitasker would then stop everything and do nothing. Called a system crash, all computers have special hardware to handle this situation, called the reset button-....

Busy Waiting:

This happens when one task is using a system resource by itself (through its having higher priority or using a semaphore), and another task cannot proceed without having access to the resource. The task then is forced to waste CPU time waiting to have access to that system resource. Since this tends to halt system performance (especially if the task is also monopolizing a system resource, which would then result in deadlock), it is considered one of the worst things that a multitasker can do. But interestingly, Busy Waiting is sometimes used to avoid or cure deadlock, by simply making task B wait until task A is finished and gives up the system resource, before it can use the system.

Memory Management:

There are MANY problems that often emerge in this subject. One is, simply enough, running out of memory. One popular way to conserve memory is to have built-in system libraries, that programmers can use for their applications. But when there are just so many programs running that they all won't fit in memory, multitasking systems often use virtual memory to cram them in.

Virtual memory simply uses all available Disk Space (Floppy or Hard Disk) as memory, saving a portion of a task to disk that is now in RAM, but is not being used by any program running on the system, and later, when there is enough memory to hold the data segment (or if the task needs to use the data segment), loading it back into memory. In a multitasking system this is used to swap portions of programs in and out of memory as they need them. So if the system was using Virtual Memory, and Task A had a segment of itself on disk while Task B was running, then when Task A receives use of the CPU, if it needs that segment to run, then the system would first save a segment of Task B that hadn't been used for a while to disk, and then load the segment needed by Task A into memory. But Virtual memory can be used, not only to let programs use more data that can fit into real memory (like editing a text file that won't fit into memory by saving parts of it to a disk file), but can also be implemented in ordinary singletasking systems.

There are dangers to using Virtual Memory, though. Virtual memory works fine when the segments that are saved onto disk are relatively small and mostly unused, but if the system loads too great a segment of a task into memory, then the system spends a long time loading and saving data segments to/from disk so to make enough room when a task loads in that segment. If the system loads too little a segment of the task in memory, though, then it hasn't saved enough memory for another task. Also, if all the data segments in memory are being used frequently, then the system thrashes, or spends so much time swapping segments to and from memory that little real work is accomplished. Both of these cases cause deadlock, and to stop them one either has to quit running a program that is in memory, so as to make room for other tasks to run in, or to simply turn off the computer and start over again.

Memory Protection:

Even though running out of memory IS a real problem in multitasking systems, almost everyone would agree that memory management is far more serious. The function of most memory managers, whether they are in software or hardware, is to prevent system memory from being fragmented. This occurs when, after the system has done several memory allocations and deallocations in its normal memory handling duties, free RAM becomes divided into many small fragments spread throughout its address space, which cannot be used by the system. If enough free RAM becomes fragmented, the system starts to lose large amounts of memory.

Since this also happens in singletasking operating systems, all operating systems perform a technique called garbage collection, in which all of this fragmented memory is collected, organized, and put back into the system's main RAM. Even though this might sound simple, the processes by which it gets this lost memory are VERY complicated. And even though software memory management CAN get the job done in most cases, it often is inefficient, and sometimes cannot properly handle its job.

And as hardware is often more efficient, less troublesome, and better suited at this type of work than software, chips that could perform

memory management functions started to appear. These processors, called Memory Management Units (or MMU's), are specifically made to handle garbage collection and memory management functions, so an operating system doesn't have to do them. Another task that MMU's often perform for the operating system is memory protection, both preventing tasks from having access to system memory that hasn't been allocated to them, or from disturbing other tasks or resources when they crash, so the whole system doesn't crash just because of one faulty program.

In this series, CPU Report has investigated the subject of multitasking, in an attempt to provide a suitable understanding of this complex issue. While this was not meant to be the "definitive" guide to multitasking, as great stacks of books have been written on the subject, it has tried to show many of the pertinent issues involved in this topic, which is at the forefront of sophisticated microcomputer technology.

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> The Future of the ST STR Featureâ €
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"....one man's opinion"

LIFE AFTER THE ATARI ST
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by Darek Mihocka,
President, Branch Always Software

In this week's discussion I'll discuss Window 3.0. I'm sure everybody reading this has heard of Windows, but I'll bet a good many of you have never actually sat down to use it and aren't completely familiar with it. I know from experience that other ST users that I've demonstrated Windows to sort of look at me funny when I explain certain features, or apparent lack of features. Imagine an environment that has no concept of desk accessories or AUTO folders, and can run completely without a mouse, and contains windows within windows! That's Windows 3.0! It sounds a lot different than GEM, but it doesn't have to be. Confused? Let's start from the beginning, keeping in mind last week's discussion about multitasking.

What is Windows? Is it an operating system, or a shell, or what? The word that I think best describes it is that it is an environment. Make no mistakes about it - when you're running Windows, MS-DOS is still the installed operating system. Yes, good old yucky MS-DOS (or MeSsy-DOS as some people refer to it). Little do people realize how similar MS-DOS and TOS are, even to the point of having many identical operating system functions. But that's for another time.

Windows extends MS-DOS by adding new functions to it. Graphics functions are obviously those included, but there are also memory management and other functions added. MS-DOS still sticks around to provide disk support, and Windows takes care of everything else. Unlike OS/2, Windows is not a complete operating system, although the two are similar. That too is for another time.

Through its 3 versions, Windows has gone through a lot of changes. However, it has the advantage of having just been recently updated (Windows 3.0) and it shares many of the great features of other environments with very few of the drawbacks. In fact, because it is sort of like a superset of GEM, it can be made to look like the GEM desktop and used like the GEM desktop. Windows offers a lot of extra power, but if you're uncomfortable with it in the beginning, you can just use what you need.

Let's try to go through a typical Windows session here on my computer. I power up the computer and a few seconds later the hard disk starts going wild. First there is the Windows logo on the screen for a few seconds. Then the desktop turns green and a single icon labeled "Program Manager" shows up in the bottom left corner of the screen and there is the familiar arrow in the middle of the screen indicating I'm using a mouse. That's the desktop? No menu bar? No disk icons? WHAT'S WRONG WITH THIS PICTURE????

To understand that, you have to remember that the Program Manager itself is just another program. Similarly on GEM, the desktop that we see is not really GEM. It uses GEM, but the desktop is just another program. On the ST it can be replaced by other desktops (or "shells" like Neodesk and DC Desktop) and on Windows the Program Manager can be replaced too. Windows all by itself just displays a green screen and a mouse pointer!

"So what's with the icon and where is the menu bar?", you ask. The answer to this question is one of the fundamental differences between GEM and Windows. If you understand this, everything else makes sense! So let's start slowly and explain this slowly.

First, how does GEM run programs? Well, the desktop comes up and puts up the menu bar, and some disk windows. When you double click on some GEM program and run it, the desktop goes away, a new menu bar comes up and a desktop is drawn with some other windows. To run another GEM program, you have exit this program, go back to the desktop, and double click some other program. And so on and so on. Blah. Blah. Blah.

Windows is multitasking. But if Windows was implemented like GEM, then it wouldn't really be multitasking, because you could only run one program at a time. So the big \$64 question was how to make Windows so as to allow you to run more than one program at a time.

The solution was to treat each program's screen (menu bar, desktop, and windows) as a window itself on a much larger desktop. The "much larger desktop" itself is the big empty green desktop that comes up when you first run Windows.

So there are two kinds of windows (although they look virtually identical) - application windows and document windows. An application window is the window that a program (also called an "application") gets when it runs. It contains the program's menu bar, slider bars, and the program's output. Then within the application window, there are document windows, which are always inside the application window, and may contain their own slider bars but no menu bars.

Think of it like this. When you run, say, First Word on GEM, there is a menu bar at the top of the screen, and each time you open a text file, another window opens on the screen containing the contents of that text file. That is a document window. The entire ST screen can be thought of as an application window. Unfortunately, with GEM you can't just magically drag or re-size the application window to reveal, say, the GEM desktop underneath. It's there, but you just can't get to it unless you close the entire First Word application window (i.e. exit).

With Windows, any program's application window can be resized. It can be maximized to use up the entire screen, and that closely resembles using GEM. You can simply configure all your programs to run full screen and not worry about multitasking or application windows and our discussion would stop here. But wait! There's more.

You can also "minimize" an application window and what appears is an icon. When you minimize an application window you do so because you are currently not using that application, and it leaves room on the screen for other applications. The application is actually still running, but probably just waiting for you to do something, like typing in a key. My Program Manager comes up minimized, which explains the icon.

I prefer to not run applications maximized, so when I double click on the Program Manager, it just draws a window that is about 1/4 of the screen in size. Within the Program Manager are smaller windows. These are the document windows. Each such window has some icons, representing the various programs on my hard disk, and they are grouped into document windows by category: Games, Utilities, Excel, etc. Also, Windows can put a minimized icon on the screen for any application (like what I did with the Program Manager) so you can just run a program by double clicking its icon on the desktop.

If I click on, say, the Tetris icon, it loads and runs Tetris. What happens? Does the screen clear? No. Tetris simply opens up an application window on top of the Program Manager window. Tetris has its own menu

bar within this window, to select such things as game level and to exit.

So how do I now go back to the Program Manager? One way you to it is to exit Tetris by either clicking in the top left corner of the Tetris window or by selecting Exit from the Tetris menu bar. The other way is to grab the mouse and click on the Program Manager window that is peeking through from behind the Tetris window. When I do that, the Program Manager window redraws on top of the Tetris window. Wow - a task switch. Ooooooh.

But wait! The Tetris game is still playing! I can see the bricks falling down behind the Program Manager. That's because Windows is multitasking and both Tetris and Program Manager are running at the same time! Time for another task switch. I click on the Tetris window again, press P for pause, and then switch back to the Program Manager.

That was just a very simple example of running two programs simultaneously. With Windows, you can open as many application windows as you wish. One window can run a word processor, one can run a spreadsheet, another can run a terminal program, another can run a game, and another can run the file manager, and so on.

Many of you will be asking, "WHY DO I NEED MULTITASKING?????". Good question, because like all goodies in life, you don't really need it. You could still use your computer without it, but then again, you could also live without GEM. Why not just go back to the good old days of command lines and typing this and typing that and function key this and control key that? We could, but we don't want to. GEM is more convenient. It allows us to do with the mouse what takes many keystrokes. It saves time and makes the computer more fun. In the same way, multitasking is useful, it is convenient and time-saving, and it is fun to use. Let me give a more complex example.

Suppose I want to write a text file, oh, say, an article on using Windows. I'm going to use Word 5.0 for this, because I happen to like the character based version of Word. Oh oh. I'm going to have to exit Windows now, no? Wrong. Windows has its own ways of dealing with non-Windows applications. When I click on the Word icon in the Program Manager, the screen goes entirely black, and Word 5.0 shows up. I can now start typing full screen in 80 columns and 25 lines. How do I task switch now?

Windows provides a few keyboard shortcuts for task switching. If I press the Control key and then the Escape key, it tells Windows that I want to switch to another task. Suddenly I'm back in the Windows desktop with Tetris and Program Manager and there is a dialog box in the middle of the screen titled "Task List". Listed in the box, surprise surprise, is Program Manager, Tetris, and Word. Then I simply click on the name of the program I want to switch to. So this way, an unlimited number of DOS based programs can run under Windows!

Here's the really cool part. Windows can make a non-Windows program run inside of a window on the Windows desktop! How? The 80386 chip has multitasking built right into it. It has a feature called virtual mode which allows it to emulate a 1 megabyte 8086 processor (or several or them). Each of these emulated processors can run a DOS program and the program will think that it is running on a 640K DOS machine without Windows. When a program running in virtual mode tries to write something to the screen, it is actually writing into this 1 megabyte of virtual machine memory, not the real screen memory showing the Windows desktop. When I press Control and Esc to task switch, Windows copies the virtual screen

memory to the real screen memory and so Word can run full screen under Windows. But If I press Alt and Return, Windows now copies this screen memory into a Window on the desktop, and presto! Word now runs in a window. Word can run like this, as can Lotus 1-2-3, the DOS command line, and thousands of other DOS programs. Windows automatically updates the window on the screen whenever the application updates its virtual screen.

Right now as I'm editing full screen I'd like to log into the weekly Thursday night conference on Compuserve. What should I do? My Tetris game isn't finished, nor is this article. First, I press Alt and Return. Now what I see is the Word window on the Windows desktop taking up approximately 1/3 of the screen. That's because at a resolution of 800x600, an 80 column by 25 line screen is quite small. I now pop up the Program Manager and run WinTerm, a terminal program that comes bundled with Windows 3. I set an appropriate font and re-size the terminal window so that both Word and WinTerm are displaying 80 columns of 25 lines in two separate windows. Program Manager and Tetris are minimized as icons at the bottom of the screen.

Now while I'm participating in the conference, I can pop into Word at any time and jot down ideas or edit this document. To keep track of how long I'm in conference, I pop into Program Manager again and run the Clock program. This simply displays the current time inside a window. I minimize Clock to an icon, and cool enough, the icon keeps displaying the current time. No need for corner clocks!

As it is now, I am running 5 different programs under Windows. All 5 are running concurrently (i.e. at the same time) and by clicking from one window to another with the mouse (or using the Task Switcher) I can type into the various programs.

Windows doesn't have desk accessories, because there is no need for desk accessories! If you wish to run the control panel, task switch to the Program Manager at any time from any program and run the control panel. If you wish to perform file operations, just run the File Manager (Windows equivalent of the GEM or Mac desktop). There are no worries about running out of the 6 desk accessory slots, or running out of memory.

Memory? Did I say memory? Yes, Windows has virtual memory support. What this means is that Windows applications can use more memory than is available in the computer. I have 4 megabytes, but that's nowhere near enough memory to do something silly like fill up all 16384 rows and 256 columns of an Excel spreadsheet with formulas. That requires over 10 megabytes of memory, yet it can be done!

The way that virtual memory works is that whenever a program tries to allocate memory that doesn't exist, Windows creates a file on the hard disk (called the "swap file") and uses that disk space to emulate extra memory. Windows keeps track of what memory is being used and what isn't. If I'm in my Excel spreadsheet gobbling up memory, Windows will realize that I'm not using Tetris, and will copy out parts of Tetris's memory to the swap file to make room for the spreadsheet. When the spreadsheet eats up all 4 megabytes of my computer's memory, Windows will copy out parts of the spreadsheet itself to the hard disk to make room for new spreadsheet cells. When a program then tries to access some memory that has been copied to disk, "swapped out", Windows then copies out some other unused piece of memory and swaps in what it needs.

Swapping sounds like a lot of trouble, but it is the way many other operating systems work too, from UNIX to OS/2. And the beauty of it is

that the memory manager of Windows takes care of everything. A program running under Windows doesn't even know that parts of it may be swapped out to disk. There is no 640K memory limit like with DOS or 4 megabyte limit like on the ST.

Unfortunately for use ST users, the 68000 chip really can't support task switching or virtual memory the way Windows does with the 80386. The 68030 can, and it is disappointing to see that the TT operating system still uses the same old crippling GEM instead of a real multitasking operating system.

Even the Macintosh will soon be able to support virtual memory with the new System 7.0 and minor hardware upgrade. The Mac already supports task switching with Multifinder (which is similar to Revolver on the ST), although it has some limitations compared to Windows.

Windows just has a lot of other cool features I didn't even touch on yet. For example, it uses a proportional font to display menu bars and dialog boxes. A proportional font just looks nicer than the regular monospaced font most computers use.

Speaking of fonts, there is a major difference between the way Windows handles fonts and printer drivers and the way the GEM does. Windows maintains all the fonts and printer drivers itself. One of the features of the control panel is the ability to install and de-install fonts. All the fonts are listed in dialog box, and when you click on a font name, it actually displays a font sample on the screen, so that you can see exactly how the font will look and how big it will be. Similarly, printers can be installed and de-installed by changing printer drivers from the control panel in the same easy way. There is only one set of font files and one set of printer driver files, which can be used by any Windows application.

Most GEM programs on the other hand use custom printer drivers, and some use custom fonts. A printer driver for say, Word Perfect, will not work with DEGAS or First Word. Or a font used with DEGAS will not work with Calamus. It's a free for all when it comes to fonts and it is a big mess. Yes, Atari did release GDOS which sort of resembles the Windows model, but GDOS was released too late to be accepted or even understood by many users and developers.

Windows applications have a common look and feel, much like applications on the Macintosh. This is because IBM bundles a book with each Windows Software Development Kit describing in detail how the Windows (and OS/2) user interfaces are to look and feel. What keys to what. What mouse actions do what. What windows parts to what. The results are that when you learn one Windows program, you can easily learn another because they are all written to conform to the same user interface standards.

Windows has a built-in clipboard that supports text, graphics, meta-files, and other formats. This allows Windows and non-Windows applications to share data. For example, one word processor can exchange formatted text with another through a simple Cut and Paste operation, even if the two word processors can't read each other's files. A paint program can store a graphics image into the clipboard which can then be pasted into a word processor.

Windows allows dialog boxes to have titles and be dragged, just like ordinary windows. If a dialog box pops up and it is covering up a part of the screen you need to answer the question in the dialog box, then simply drag the dialog box to the side.

The Windows clipboard has other features such as installing a desktop pattern or desktop picture, changing screen colors, setting mouse acceleration and swapping the mouse buttons for left-handed people, setting the serial and parallel ports, and setting the keyboard repeat rate.

Windows comes bundled with a word processor, file manager, terminal emulation software, calculator utility, clock, paint program, and other useful software as well as fonts and background pictures. A bare bones computer with only DOS and Windows installed can be used for productive work right away.

Windows allows you to re-size windows by clicking anywhere on the edge of the window and dragging. For example, you can click on the bottom right corner of a window to re-size it in much the same way as on GEM or the Mac, but you can also click on, say, the left edge of the window and re-size it horizontally.

Windows allows you to task switch at almost any time. Let's say you are trying to save a text file from a word processor and the disk is full. On GEM, if you're not using Universal Item Selector, you'd be out of luck. On Windows, simply task switch to the File Manager and format a disk or delete files then task switch back to the word processor.

Now that I've covered the basic list of features of Windows, I'll answer some of the questions and complaints I know will be raised for this discussion and also from last week.

Q: Windows is a memory hog. Do I need tons of memory?

A: No. Windows will run just fine with one megabyte of RAM. Even without virtual memory enabled, 1 megabyte will allow you to run several Windows applications at once. The advantage of having more RAM is that the prospect of having to start swapping to disk is less and so programs will run at maximum speed. Memory is cheap, and the price difference between one megabyte and four megabytes is too small to even bother with buying only one megabyte.

Q: Windows is hard to install.

A: Simply place the Setup disk in your floppy disk drive and run the setup program. Insert a new disk when prompted. The whole procedure takes about 5 minutes. If those instructions are too hard to follow, then I can see where there would be a problem.

Q: GEM is easy and fun to use. I don't need multitasking. I have Hotwire and Neodesk and DC Desktop and Universal Item Selector and Quick ST II and Multidesk and GDOS and other AUTO folder stuff.

A: GEM is fun? Baloney. First of all, you can't appreciate multitasking until you try it. Everything has a learning curve, and spending a few minutes now to learn it will save you a lot of time later. Windows also has no need for utilities such as the above mentioned because it doesn't have to be hacked into like GEM does. And when you do have to hook into it, Windows provides functions for programs to hook into it legally and thus not interfere with other programs. And typical users do not need to spend hundreds of dollars on utilities that simply make GEM more usable. I'll admit it - Quick ST is a great thing on the ST, but really useless on Windows. Windows is faster than GEM to begin with (since the graphics routines are not all written in C like GEM is) and the

processors it runs on are faster. Just a few days ago I ported the ST Xformer 8-bit emulator to the 386 and now it runs 5 times faster than on the ST (or 3 times compared to a 16MHz 1040ST or Mega STE) yet my 386 machine is less expensive than something like a Mega STE.

Q: What about sound and MIDI and all the other built-in goodies that the ST or TT provides?

A: There are boards available for the PC that add MIDI and stereo sound sampling and playback capability. One such board I saw (oddly enough at an Atari ST dealer) went for about \$200.

Someone commented in last week's ST Report that the TT has all the features I talked about (in the 386) built-in at no cost whereas the 386 has all these extra costs. Baloney! First of all, the open architecture of the PC machines allows anyone to add memory, add a hard disk, add a parallel interface, add a graphics cards, etc. very easily and to change these devices when necessary. If my hard disk is too small, I can put in a larger one. If I want to add a mouse, I drop in a mouse card. You, the user, get to choose what goes into your machine. You are not paying for features you don't need (I personally don't use MIDI and I doubt that most ST users do) or features that will never be used (such as the STE's new and unused joystick ports) or features that don't do all they were hyped up to do (like the blitter chip). I can spend the \$200 that would have gone for MIDI and use it to buy 4 meg of RAM instead of 1 meg. That same person went on to mention that the TT only has 320x480 resolution in 256 colors (while the Mac II and VGA cards are double that resolution), but one day he'll be able to hook up his VME bus to some spectacular new high resolution monitor. Someday, and at some unknown price, if ever.

What really cracked me up was the comment that Windows was not compatible with much software while the TT was. It's more like the other way around by his own admission. Folks, if you're going to comment, please research what you say. This person has obviously no experience with Windows and probably derives most of his information about the TT from Atari press releases instead of basing anything on experience. Please don't compare apples with oranges. Comparing a PC that exists now to a machine that might one day actually hit the market is not fair. 18 months ago I read in a print magazine that Atari had a 68000 based game machine ready to go. Where? We've been hearing about the TT for two years now. Two years ago the TT would have been far more competitive against the PCs available at the time. And the STE and LYNX were late to ship. I don't see a TT on sale at my Atari dealer so I can't suggest to anyone to delay purchasing another computer in the hopes that the TT might ship one day.

Q: What else?

A: Merry Christmas! & Happy New Year! To be continued in January. I'll discuss other software for the PC (Windows and non-Windows) as well as talking about developing software on the PC.

> ADSPEED STR FOCUSâ €
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"...Today, I purchased AdSpeed by ICD"

ADSPEED BY ICD
"I CAN'T BELIEVE IT!"

(This article was retransmitted to various points in the net by a friend of the author - see note 3 below)

OK! After all these years of reading reviews and looking to make my 1040ST more than it was to begin with, I am impelled to write a review so that all of you can share in this. I am using WordWriter2 to scribe this into electronic ink. Am I THE LEAST BIT concerned about scrolling, slow spellchecking, or the time it takes to reformat a document? NO! When I went to LDW Power to make the chart below, was I worried about scrolling or computational delays? NO! Do I have to wait an eternity for GIF conversions, fractal generations, CAD 3D redrawing, WordPerfect hyphenations, data base sorts, etc, etc, etc. NO! Or stolen CPU interrupt time for background downloading and uploading, or mouse accelerators, or GDOS replacements all of which can make everything just a bit slower? NO! Today I purchased AdSpeed by ICD. It is truly a "power without price" product.

John Damiano wrote about AdSpeed two or three weeks ago in ST Report. He included a lot about installing Adspeed but only a few sentences about how well it works. But that included the phrase: "It feels like a new computer.." So I took a leap of faith when AdSpeed came to the local store this week. After all, ICD hadn't let me down before when I added a used hard drive to my ST using ICD boards and software.

Over the years my search for the better ST led me to add 3 megs to the one, a Tweety Board for a semblance of stereo sound, and TOS 1.4. Along with the hard drive, those were my hardware enhancements. Software-wise my ST has been most affected by the Codeheads and the two well-known speed enhancement products.

Yes, I use both Turbo ST and Quick ST and, as you'll see below, they only enhance AdSpeed dramatically. Before AdSpeed, my ST had at least tolerable performance in GEM windowing and scrolling because these speed products have been great. They actually complement each other when loaded together.

I left AdSpeed installation to the tech at a local store while I went out with the family for Christmas shopping. AdSpeed gives you the option to boot up with the old 8 mHz or the new 16 mHz. I chose 8 so that the speed would not interfere with any floppy-loaded games my son would be playing. (I had read often enough about how games-makers break the rules of programming - thank you Charles F. Johnson). I figured I could software load the 16 mHz when I booted from hard drive for applications.

When I picked it up from the store, I was told that "it really seemed to work." Home again, cables and plugs in, software ready, boot... Well, at least it booted OK. I ran 16MHZ.PRG. A FLASH of a message too quick

to read and back to the desktop, but wait! Didn't that open window come back awfully fast? I tried another. ZIP! I could still see a quick screen draw but not if I blinked.

I tried application after utility after program. There were no conflicts with any commercial or well-written PD program. And everything was noticeably faster - the speed I had waited for all these years.

So, like everyone else, I went off to Darek Mihocka's Quick Index (1.8, for those of you who need to know such things). Here is a table, of my comparisons:

TOS 1.4, MEDIUM RESOLUTION

	ADSPEED Quick ST Turbo ST	ADSPEED Quick ST Turbo ST	ADSPEED Turbo ST	ADSPEED ONLY	Before ADSPEED Quick ST Turbo ST
CPU Mem	163%	164%	163%	164%	99%
CPU Reg	203%	203%	203%	203%	100%
CPU Divide	202%	203%	202%	203%	99%
CPU Shifts	206%	207%	207%	207%	99%
64K Read	5912%	5912%	5912%	5853%	5953%
GEMDOS File	2957%	2994%	2994%	3032%	no recollection
Disk RPM	11250%	11612%	11250%	10285%	7500%
TOS Text	599%	436%	601%	150%	305%
TOS String	3344%	3344%	2801%	129%	2072%
TOS Scroll	140%	138%	140%	111%	132%
Dialog	455%	411%	455%	167%	285%

I am sure one of the first things you will notice is there are columns with Turbo ST and Quick ST. The speed satisfaction I am enjoying is from using BOTH AND AdSpeed. Check the first three columns and you'll see what I mean. The last column shows the Index results of using both before AdSpeed came into the picture. Yes, Darek, Quick ST does make a difference in grayed, bold, etc., text displays that Turbo ST doesn't. And I had stopped using most anything that would slow down the CPU but ICD's optional write cache/verify. Hence the 99% figure for most of the CPU indexes. Without the caches, I had gotten the GEM Dialog box indexes up to 287%, but what's a couple of percent compared to a lifesaving write cache/verify.

In case you are curious, here are the indexes from Darek's BMVGTEF-F.PRg (with Quick ST installed, of course):

Normal: 33
 Bold: 31
 Grayed: 33
 Italic: 43
 Underline: 29

Since these are in 1/200th's of a second, they are fast enough for me (WHEW!).

As anyone points out, these indexes don't really tell the whole tale by a mile. It's all really in using your software that you can see what's going on. And I've given you a taste of all of that in the opening. I really wanted you to be able to see the indexes so you could

share, as soon as possible, in the reality of AdSpeed.

By itself, you'll get twice the processing speed. You'll see the difference whenever you use your ST. Is that good? Well, I've never written a review before, let alone felt the need to write one. I think that says it all.

:NOW FOR SOME NOTES OF INTEREST TO SOME:

1) I have discovered problems with running MONOEM14.PRG and the new Take Notes programmers calculator (sigh!).

2) My ST has an extensive AUTO folder. Some programs do affect the indexes slightly. And REGACC seems to speed up Dialog box drawing and slow down TOS String indexes (I don't know why.) Here is the list for my ST (yes, 4 megs makes all the difference):

PINHEAD 1.8	POOLFIX4	TIMESET	QUICKST
G+PLUS	RESR	MOUSE2	DCSHOW 1.1
CODE_RAM	ILINKCLP	REGACC	UISIII
ADSPEED	16MHZ		

3) Who am I? Just a 40+ year-old member of the electronic community and living on Long Island in New York. You wouldn't know me. I am not affiliated with any person, company, or product mentioned here. They wouldn't know me (I'm terrible at filling out warranty/registration cards) nor would you. And, except for the occasional on-line arguments, I enjoy experiencing the anonymous existence of peaceful information, questions, comments and personalities that appear throughout the net. So, I am leaving it that way for now.

> DENNY HAYES STR FOCUSâ € * EXCLUSIVE! * "...if I single someone out.."
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THE PRICE OF COPYRIGHT VIOLATION
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STReport has obtained directly from DENNIS HAYES his very own statements concerning his arrest and ultimate conviction for copyright violation. Names of individuals and companys mentioned have been removed or blocked out.

by Dennis Hayes aka "Denny" Hayes

Part I
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This is the statement I prepared to read at my sentencing, but was advised not to read, because the judicial system doesn't like you saying bad things about them. I've also added a comment at the end. I've tried to make sure it's as truthful as I can. If there are any mistakes, it wasn't intentional. Of course everything is from my point of view. I can't pretend to be someone else, and think like them. Many are going to read this, and say I got what I deserved. Ignorance is bliss. To affect what happens to me has nothing to do with me writing this. My sentencing is over, and what I say here makes little difference with respect to me. But if anything, I say here, can help keep anyone else from going through this, it was worth it, and will make me feel what I have gone through had some purpose.

S T A T E M E N T

Your honor,

I've been informed that I should make a statement in my behalf. I've had a long time trying to decide what to say, but it's hard to decide what to say. I'm not an attorney, and don't know what will help me or hurt me, and I doubt that it makes any difference what I say. If I say something good about myself it comes out that I'm trying to pretend to be an innocent bystander. If I comment on the many problems I've had to date, I'm looked at as a complainer, and most of us have problems in life. If I say nothing, my family has to suffer. If I comment on the questionable tactics used to prosecute me, I'm passing the buck, and not accepting blame for my actions. And in reality most of the agents I've met are surprisingly intelligent, and fair. I even thought of mentioning one who has tried his best to be fair, but I'm afraid if I single someone out it might put him in bad light. Anyway, he knows who he is, and he has my thanks.

Since I'm not sure what is best said, I'm just going to say what I feel, trying not to hurt anyone, and let it fall where it may. And since the pre-sentencing investigation report started when I was in grade school, so will I.

I'm a technically oriented person who started school, and really enjoyed learning new things. When the rest of my peers were playing baseball, I was studying. And for this effort I had the words honor pupil written on the side of my report card every year. The problem was, and is, there is no reward for this effort. The kid who can knock a home run, and lean against the wall looking cool, without saying a thing gets all the attention. In reality he probably says nothing because he can't put two syllables together to form a word.

There are many other advantages to not appearing smarter than anyone. When my oldest daughter was in the first grade, she could already read, because I had spent the time to teach her. Her teacher complained to me that I should stop teaching things to her ahead of time, because it made it hard for the teacher to teach her, when she already knows, the things she is trying to teach to her. I guess they want everyone at the same level now. Just a couple weeks ago she came home, and said she had to redo a report she had turned in, because she had done it on a computer,

and was told it wasn't fair to the kids that didn't have one. I guess she also shouldn't use her brain, if the rest of the class doesn't have one as good either.

So around the sixth grade I decided that if I didn't appear too smart I might be accepted a little more. That was easy, just fail a few tests on purpose. The problem was it didn't work. I just didn't think like most people, and I didn't like baseball, or football. Also, in most other areas I didn't think the same. And I didn't take what was told to me by others without trying to find out what was really true. Which is probably a large factor that brought me here.

I joined the navy after graduating from high school, and entered electronics school. I graduated in the top 10% of my class, and was jumped to the next rank.

In college I didn't understand the importance of a degree. I just loved electronics, and wanted to learn everything about it that I could without wasting time on subjects like English, and Psychology. Or maybe I was just impatient. So even though I've had many hours, I never matriculated, and therefore never received a degree.

After school I started working for a company as a non degreed engineer, at \$3.10 per hour. Very quickly I was considered the oddball electronics wizard of the company. This upset the former wizards, who tried to make it as hard as they could for me. After three, and a half years, I had all the political beating I could take, so I quit, and took a job as assistant chief engineer with a new company, which was, four years later, bought out by the same guy that started Days Inn Motel chain. During the transfer they had a flood which put them out of business. So I was left without a job.

I then started working for consulting engineering firms on assignment to large companies like Procter & Gamble, Monsanto, AM Kinny, etc.

As I started having a family, I wanted to make a better living for them, and myself. Large Fortune 500 companies required a degree, and you really didn't need to know much. And smaller companies didn't pay much. They liked being able to hire someone who is good, and who they didn't have to pay much. It's a shame that you get paid for the piece of paper rather than what you know, and can do. Prior to having a family, I really didn't care though, I loved what I was doing, and the money didn't matter. So I decided to start a company with a friend of mine. The problem was, I didn't realize how lazy he was, and after some customers cancelled their orders, because he didn't finish his part, I started my own company, designing, and building robotics, and test equipment for large corporations.

That was one of the biggest mistakes I ever made. I worked over 100 hours a week, and made little money. Large corporations seem to get where they are by walking on small companies, and throwing them away when they ask a fair shake. I had a meeting on the eleventh floor of a local chemical corporation tower, where they admitted they owed me thousands of dollars, but were not going to pay, because they had hired some new young hot shots who wanted to do the job by themselves. The former head of the department had been forced into an early retirement at the age of 59, which later caused him a heart attack. When I mentioned that I would have to take them to court, I was informed that since all the orders, they had given me, were rush orders, they hadn't sent me any paper work. In fact I don't ever remember getting paper work on any jobs I ever did for them.

Every job was a rush job, and if you wanted any future orders from them you did what they ask. Of course I consulted an attorney, and of course he told me that I would be a fool to take on a company of that size. I made the mistake one time to take a company to court, who owed me a large amount of money, and I saw what happens. I won't go into detail of what the job was, if you are like most attorneys, high tech stuff is out of your realm, and it would take too long to explain. But to make it simple, it was an assembly job, something any low tech person could do. I did this job, on 30 day open account payment, which is quite usual in the electronic world. I sent the first half open account. But before the second half of the order was completed, I was informed by another company, that they had a bad reputation for not paying their debts. So I made the second half COD. True to form they didn't pay for the first half.

After months of run around phone calls about the person being responsible for payment being out of town, etc, I decided to take them to court. They counter-sued, saying the units I'd done were defective. And without notifying me, or giving me the opportunity to repair any supposed defect, they said, they had repaired them at a cost of twice what I charged them for the whole order. My attorney felt since they were caught in many lies in court, and they admitted they never contacted me about any defects, we would win. Two weeks later the decision came down that I owed them all they asked for, and I got nothing. What happened, who knows. Since Cincinnati is not a very good place for a high tech business, and I'd had quite a few other bad debts, I was forced into bankruptcy.

But not being the kind of person who gives up, I started again with a business manufacturing printed circuit boards, and consumer products. I guess this was like jumping from the frying pan to the fire. At one time Cincinnati had about a dozen specialty electronic design companies in town. Now there is only one I know of. They have all realized there is no money in it. So I'm sure it's not just my ability to run a business. People save up a little money and get the idea to sell some widget or something. They hire someone like me to design it for them, not knowing that the product has little importance. And after the reality hits they drop the project like a hot potato owing me a large amount of money. I tried getting money up front, but they use it up then they have me bill them for the rest at 30 days, which stretches to 90 days, or more before I realize they have run out of money. At that time I've worked over three months for nothing.

It's a shame but most people don't know quality. They buy advertising, name, and flair. I have a friend who is the head of the design department of the largest local toy company, who tells me the product is 7th on the list of importance with his company. Marketing of course is first, and the list goes down from there. You can quickly see you don't need a good product. If you have a good marketing program you can sell manure for \$5.00 a gallon as fertilizer, face cream, or whatever. It's a shame, but I now find my skills aren't really needed.

After a few years of this, I see I'm heading for another bankruptcy, I feel I'm getting old, I then lost someone I cared a lot about, and I find myself wandering around Drug Palace trying to find something I can kill myself with, with assurance that it will work. Fortunately the medicines that work for sure are prescription only. Also, I began to realize that it would put a big strain on my family, and I didn't want to do to them what my mom did to me, so I called University Hospital and told them something was wrong with my head. They put me on a new anti-depressant drug test program, which turned me into a zombie. Our living conditions were really bad. My furnace went out, and I couldn't afford to replace

it. So for three winters I asphyxiated my family and myself with kerosene heaters, which didn't even do much, except make us all cough a lot from the fumes, when it was really cold. So we often wore coats to help keep us warm. They started foreclosure on our home three times, but somehow we ended up coming up with enough money to stop it. I later finally lost it. At one point they turned our electricity off. The kids were sitting in the tub using the hot water left in the hot water tank to warm them up, until it ran out. I had no money but I was expecting a check for a little job I'd done, so I turned the electricity back on again myself. A few days later I received the check, and paid the electric bill. Then many months later, a representative of CG&E and a county sheriff came to my house with a warrant for my arrest for theft of utilities, even though my electricity was paid up to date. After talking to my attorney they agreed to drop the charges, if I would pay around \$500.00 for a crack in the meter that I'm not sure I even caused. I paid it, and a few weeks later CG&E re-instituted the charges, saying the person who agreed to drop them didn't have the authority.

Since the utility companies have recently pushed through a law (which I doubt that many know about) that makes it a felony to do anything against them, I was charged with a felony. I was encouraged to plead guilty to a lesser charge, and was put on one year probation. And then my wife left me, stating that she had enough of being poor, and later divorced me. Maybe she is better off. Life like this is tough.

So after a few months I had enough of the pills I was taking, and threw them in the garbage. I now partially understand how my mother, after graduating with honors at the top of her class took 30 sleeping pills and killed herself. When I was younger, I would never have believed it could get this bad. As I think about it though, I guess it makes sense. If you don't have the burning desire to accomplish much, you face very little disappointment.

For the next two or three years I could not function. I'd sit on the couch crying sometime, in a daze sometime, thinking a lot, and trying to function off, and on. And I wasn't a very good provider for my family. We would be on welfare, then I would do a little job, then we were back on welfare, etc. Somewhere in there I bought a small game computer, and learned how to push it beyond its limits. I thought games were a waste of time, so when I heard a company was coming out with a device that plugs into the slot on the computer meant for game, but would allow me to run word processors, spreadsheets, etc I checked into it. I found the device needed a set of two computer chips from a MacIntosh computer, so I called around, and ended up borrowing some money, and buying about a dozen from different places. I figured since the supply seemed low, I could sell the remainder at a little markup. Later I ran an ad on a computer bulletin board, that I had some chips for sale, and if anyone was interested they could leave me a message. I received over 300 requests for the chips.

Then I started thinking. I knew I could copy the chips for my friends, and myself. That way I could sell the rest of the chips I had and make a few dollars. So I bought some blank chips, copied the chips, and sold the ones I'd bought. After a while everyone, I hadn't shipped to, was calling to find out why I didn't ship them any. I told them that I only had purchased a dozen sets, and they were all gone. So I decided to order some more chips, copy them, and send everyone a set.

This continued until I had orders coming in faster than I could make them. At this point I started wondering about the legal problems I might get myself into, so I contacted from 5 to 10 attorneys (including my

present attorney) to find out what could happen. Some said they didn't know for sure, and others said I could be sued by Apple for copyright infringement. Not one ever mentioned anything about criminal prosecution, even though I told them exactly what I was doing. One of the investigators recently told me, I should have known it was a criminal violation to do what I was doing, because there are many indications in life that it is a criminal offence, like the notice on video tapes. I told him that there is so much false propaganda in society that I felt the only way to find out for sure was to check with the people who should know. I guess I learned something there.

A year and a half ago, I was asked by the company who made the device, which my chips plugged into, to show people how it worked at a computer show in Chicago. At that show, about five business men came up to me and asked me where you get the chips to make the device work. I told them that they could order them from me. At that point they informed me that two of them were attorneys, and the other three were from Apple Computer. Since they didn't seem upset, and seemed only curious how a cheap game computer could run software created to run on a MacIntosh, I assumed they didn't really object. If they had ever even implied that they wanted me to quit, I would have done so. I had already made more money than I ever expected too. It also seemed in line with Apples normal policy. They encouraged schools to use MacIntosh software by selling MacIntosh computers to the schools at almost cost. They have many times published that students would get used to using Mac software, and then recommend MacIntosh computers when they got into the business force. Allowing kids to use game computers accomplishes the same. It's curious that when everyone is questioned about a victim of my crime, they really can't find one, so they dance around the question. In reality I doubt that there is a victim. The users are happy they have access to information they wouldn't be able to afford. And in more ways than one it is boosting Mac sales.

In fact I had a policeman from New York who bought a set of ROMs from me to use in his sons computer, and later showed it to his department who ended up buying hundreds of thousands of dollars worth of MacIntosh computers for their department. I had another person buy a set for one of his children's computer. He kept them for four months, and called me one day to ask if he could return them and get some money back. When I asked him why, he informed me he was a doctor, and had went out and spent over \$10,000.00 on a top of the line Mac IIci. I told him to send his ROM chips back, and I would give him all his money back. And these are only a few that I know of. Until I was charged, I had sold over 5,000.00 sets of ROMs to every kind of person from the US Treasury Dept, and the Veterans Administration to school kids who were using their game computer to do their homework. But I doubt that many people who can really afford to buy a MacIntosh computer are going to buy a game computer with all of its problems.

It was funny though, when I was asked what the US government could possibly be using the ROMs for, as if they never would skirt around the law. I don't mean to pick on government workers, but even though they may not want to admit it they are just like the rest of us. Getting what they can for as little as they can, and trying to do the best they can in a situation where the cards are stacked against them. I know they have been cutting the budget, but I believe the government can afford something besides a \$300.00 game computer. It won't ever be public, but I think I know what really happened. Some people working for the government wanted to play with one, and just got the government to pay for it, and since the FBI knows about it, he probably is already in trouble. See they are as bad, and sometimes worse than the rest of us. It makes you wonder how

many other personal toys, the public is paying for. Mentioning this is not an attempt to point the finger, and say they do it too..... Well on second thought maybe it was, otherwise I wouldn't have mentioned it. But, I am still guilty of making them. Without me they would have probably had a friend copy the program into an EPROM or something. In fact from what I have counted, only about a forth of the people have been buying ROMs like the ones I made. Most people in the computer world probably either make them themselves, since it is so simple, or get a copy of the program on a computer disc, which is even easier.

All this may sound like Greek to a person who doesn't spend much time with computers, but swapping computer programs, is the norm in the computer world. To date, I've never met a person who wouldn't ask for a copy of a program I had, or more often agree to swap a copy of a program he had for one I had. There are many hundreds of computer boards around the US, and other countries, who offer a 5 or 8 to one exchange. Of course they are all copyrighted, and anytime you copy one you are breaking the law, but given the option to do without or pay the \$200 to \$20,000.00 or more for a program they aren't really going to use in business, they would probably do without. For most it's really more like collecting baseball cards, since very few, I talk to, ever seem to know much about the programs they already have. It takes much effort, and most people are lazy when it comes to using their brains to learn something new, or just don't have the time. It's the few that do, that go on to become the whiz kids of the future. If they don't have access to the information, this country is doomed.

Try to compare it to going to the public library in which almost all books are copyrighted. Now try to find a floor of the library without a copier. What's that copier for. Now, and in the future more and more data is being put on computer discs. In the distant future the library as it is today will probably disappear. Can you imagine what it would be like if you as an attorney, or a student had to buy every book you used at the library. I understand that there is a law that says you can now copy part of a book but not the whole book, but there is no way you can copy part of a computer disc, and be able to use it. Or to really compare apples and apples, attorneys and many other professionals are using what they copy to make money, so you could say they should have to buy the book. Well, in reality if they find they use it a lot, they usually do. And in the computer world, if they use a program a lot, they also usually do. It's so much nicer to have the support of the author of the program, and be able to call them and get help by giving them your buyers' authorization number off the box, when you need help.

And if you know very little about computers, what I did was sort of like providing the viewer to look at these programs. And if you have the viewer, you look at MacIntosh programs, and if you find a use for them you buy them, and Apple, and their developers therefore make money. And if they have a real use for the programs, they usually get discouraged by the problems of the game computer, and you go out and buy a real MacIntosh, which makes Apple even more money.

I still can't understand why, if it is now the business of the FBI, to stop the pirating of software, why do they know about these pirate boards, and not stop them. And I can guarantee they know about many of them. From watching, and talking to them it seems it's only against the law if you make money doing it. That's cute, you can supposedly cheat a company out of all the money you want, but if you make too much money doing it, the FBI is going to take it away, put you in jail, and not give a cent to the people who have been ripped off. There are some other

things they have done, in my case, which I won't mention because it might hurt people needlessly, which also let me know this is true. Also, in my case they say they are not even sure Apple lost any money. I think I may have figured out the amount too. I watched an agent get chewed out in front of me for telling his boss that I had a million dollars, when I only had less than a \$400,000.00. It seemed he was irritated that they came after me before I made enough money for them. Which was also in bad taste. He could have waited until I wasn't around. I actually felt sorry for the guy.

Contrary to what Apple might try to say, real businesses aren't going to buy game computers to use, and the game computer doesn't run all the software, or have color, anyway. I also doubt that many of these mostly kids who are using game computers could afford the over \$3000.00 price for a Mac. And the idea as was mentioned by Apple's attorneys that they would worry about repair of the bad chips they might get back, is also ridiculous since they admitted the part only cost them \$1.00, and if every chip I ever sold failed they could replace them all for less than \$5,000.00. To date I've only had about a dozen people call and say their chips didn't work, and I just sent them a new one. In reality, when I checked them most of them weren't really bad at all. They must have been plugging them in wrong or something. It's very rare for a chip that has no moving parts to ever go bad.

I admire IBM who when Compact Computer Company did exactly what I did, by copying the chips from IBM's MS DOS PC computer, told Compact Computer they didn't care, and that they felt it would help MS DOS computer sales. And I guess it worked. Today MS DOS computer sales count for over 60% of all 'S computer sales. I'm curious what would have happened if IBM had taken the position of Apple computer. I wonder if they would have charged the owners of that large corporation with something, and then tack on charges that carries 26 years in jail. I doubt it.

Another interesting thing is that the copyright, that I'm accused of violating, is presently in litigation in California. And the ROM chips I was selling aren't even for sale anymore, by Apple. If you own a MacIntosh computer, and have a chip go bad, tough luck, it's out of warranty, and you go out and plunk down another \$3000.00 for another one. They probably won't admit this, but I've sold quite a few hundred sets to repair centers for Apple, who say they can't get them from Apple anymore at any cost. As for the litigation I mentioned, it seems everyone is in litigation. IBM has encouraged Microsoft Corporation and Hewlett Packard Corporation to make a program that works like the MacIntosh ROMs to be used in the IBM MS DOS computer, so Apple is suing them. This upset many people, including Apple Records who is now suing Apple Computer for using their name and going into the music business without their permission. And Xerox is suing Apple Computer for copying part of the same program which is in the ROMs that I'm accused of copying. They say they created it to be used in a computer that they later decided not to produce, and Apple has copied it without their permission. Also there is a group of engineers within Apple who calls themselves the New Prometheus League who are dissatisfied with the bully tactics used by Apple, and are giving away the program I was selling to anyone who asks for it at no charge.

Apple appears to be trying to monopolize a computer that they didn't really totally create themselves, and is making many people in the computer world very unhappy. They drastically over charge for it, and sue anyone who is possibly a threat. Now they have the FBI doing their work for them, so they don't look worse than they already do. You can buy an IBM with the same power for less than a third of the cost. It's very

interesting that you can run most of their software on a game computer that sells for a little over \$300.00 and until recently they sold the lowest cost Mac for over \$3000.00. Fortunately computer publications aren't so sympathetic, and are informing people of what is going on. Also, fortunately for the consumer, so many people are angry that I doubt that Apple will be able to hold out in the long run. In a way I hate to see it. The Mac is a really nice computer and I'm going to hate to see developers steer away from it. But maybe it will make them clean up their act. In reality, I doubt it.

I've been asked many times by companies wanting to create a clone of the Mac if I could sell them 256K ROMs from the top of the line Mac II family. It's actually as easy to copy as the ones I sold, and I could get twice the money, but I like the Mac computer, and don't want to do anything that would harm Apple. Not for Apple themselves, but the consumer like myself would be harmed. My interest in playing with Mac software is what has helped bring me out of the deep depression I was in. I have also met a friend who lives in Pasadena, CA who is in the same boat. His wife died, and at the age of 60 sitting around waiting to die he developed an interest in Mac software, and now lives in his computer as I do. That was until the FBI took his ROM set away from him. He could never have done it without the emulator by Gadgets Inc, and the ROMs I sold him. The computer would have cost more than his car.

This same Apple Inc. has now contacted the FBI to use them to stop me, when all they would have had to do is ask me to stop. And all the reports show that the FBI has really done everything by themselves, so as to not involve Apple. I even believed it for a while. In order to not hurt the persons who finally let me know what really happened, I won't mention how I found out to the contrary. Now I'm forced to plead guilty to charges, or I will be charged with multiples of the same charges for each transaction, and other charges, which carry more time than me and my great grandchildren have to live. But the real reason I plead guilty was that I didn't want anymore local publicity than has already been published, and I've been told you can't beat the IRS or the FBI, anyway. So far it has appeared in only one local paper, and the way it was worded, mentioning guns without saying that they were legally registered, and using words like money laundering which most people believe has something to do with drugs, has caused many people to believe I must be involved with the Mafia. My oldest daughter cried herself to sleep one night, when her best friend's father told his daughter that she wasn't allowed to talk to her or come to our home anymore, because my criminal gangster friends might come after me sometime and hurt his daughter. And her dad is supposed to be an intelligent engineer at General Electric Company. I wonder what the not too intelligent people are thinking. But since writing this, and receiving my sentence I have decide that, hiding things lets them hurt you more.

It does seem a little out of proportion to tack on laws that carry a 25 year sentence to a charge that carries a maximum sentence of one year. And even though I understand that ignorance is no excuse, it's interesting that when I went to question people to find out who created all the lies on the search and seizure warrant, I questioned my bank manager who along with denying that he said what was stated on the report, went on to tell me that he was asked why he didn't report me when I was making so many transactions under \$10,000.00. He told me that, he told them, he knew the form had to filled out for transactions over \$10,000.00 but he didn't know it was against the law to do anything under that amount. One of my attorneys, after reading the law, said heck the way the law is written, I might have been guilty of violating it, in the past. I told him to lower his

voice, or he might be charged next. I don't know how they can expect people to follow the rules, if no one seems to know the rules.

It has been implied though not stated that I was going to hide my income from IRS. This is total bunk. In the search warrant it was reported that I told bank managers, and other people, on many different occasions, that I was trying to cheat on my taxes. I talk a lot, but I don't think I would be that crazy, even if I really had the intent. And all of them denied it, when I later asked them. Since I'm hoping the prosecution hasn't gone as far as to make things up, it's either that someone tried to score some points while talking to an agent, or they misread my attempts to hide my actions, and told themselves, that was what I was doing. There probably is no way to ever find out. At another bank where it was stated that, I said the same thing, I have only talked to the young teller, and I really believed her when she said no one ever talked to her. I'd guess the information was third hand from her boss, who I have never talked, too. So many people have supposedly said it, that it appears as if it's coming from a script. I could go on and on about this, which serves no purpose.

I guess it's just that when you do unusual or questionable things people read into it what they want, too. I even had the probation officer who came to make a pre-sentence investigation report on me write in his report that I told him I was going to cheat on my taxes. Now this is really nuts. I had told him when he was here that I had no intention of cheating on my taxes. After he left, I called him to tell him something I had forgotten, and ended up telling him again, just to make sure he understood, that I had no intention of cheating on my taxes. When a copy of his report came to me a few weeks later, it said I told him I was going to cheat on my taxes. Since I had the right to object, I called my attorney and had him get it removed. That is, I hope, I never saw the final edition. It's as if this fixation is in everyone's head. In all honesty, the investigator I talked too, was very fair in his report. He probably was obligated to say this or something. I really don't know. All I know for sure is that I doubt that I would have the nerve to falsify my income tax, knowing I would probably be audited, and I would have had no way of knowing how much information they would have known. I told an FBI agent recently, that knowing my personality, it's possible that I would have pushed the limits a little, but didn't even get to find out, and really even doubt that. At one time I had thought of giving them an extra \$50,000.00 beyond what I owed them, just to insure they wouldn't come after me. But, as my dad, who was head of a local branch of the Ohio State tax bureau for many years told me, with the IRS rules the way they are, I probable would still have been charged with something.

I had more money than I needed, and was trying to straighten things out. I did many stupid things that may have indicated I might try to cheat. But everyone knows, it is serious stuff to make a lot of money, and not pay income taxes. If I had to guess what I would have done, from past filing experience, I probably would have done, what I did in previous years. Take the book you get from IRS, go down page by page, looking for the category things I had bought, fell under, and if it looked as if I could deduct it, I would. Because every thing written can be interpreted may different ways, I probably would have deducted too little or too much. I wonder if anyone even believes me, even my attorney may not, though he probably really doesn't care, he's just doing his job the best he can. In fact that seems what everyone is doing, while covering their tail at the same time. It's real frustrating when you know your own thoughts, but can't find a way to explain them to others, without them reading in their own thoughts. And even if you could, the system is set up so, that most

of them can't even do anything about the chain of events anyway. Here I am not being charged with trying to rip off IRS, but yet since the prosecutors feel that was what I was going to do, they have used other charges which can convict me without actually having to charge me with what they think I was going to do. Something is definitely wrong with this system.

As my secretary, my friends, my family, and myself have many times told the FBI, and if anyone is really interested, I felt that some day I might be sued by Apple as attorneys have told me, so if it happened I didn't want them to be able to find my money. In fact most of my money came from out of this country via bank transfers, which appear on my bank statements which would be available at any audit. I admit I wrote checks to myself to remove the money from the bank, but I don't believe this is against the law, and I also cashed most of the US checks written to my name, which is also not against the law, or the bank wouldn't have let me do it. During two bankruptcies I've had creditors go into my account and take all they could find. At one time I had no money for groceries, so I borrowed some money from my brother, and like an idiot put it in my checking account. The next day one of my creditors took every penny. I ended up going to welfare to get an emergency food voucher.

I admit I didn't file income tax for a few years. I wasn't making any money, and in my depressed state, not really wanting to live anymore, filing income tax was low in priority. I'd also asked what the penalty for not filing was. and I was told that I would have to pay an additional penalty based on what I owed them, which in my case was nothing. I understand, unless you make a certain amount, which I'm sure I didn't, you aren't required to even file. But I bet, if you asked 10 attorneys, you would get either an I don't really know for sure, or 10 different stories. They don't even know all the laws. I understand, however, as consistency follows through, there is a law that says you must file, and another one that says you don't need to. And you have to guess which one to use.

The biggest mistake I made appears to be that I took cash from my checking account then purchased cashier's checks for an amount under \$10,000.00 to buy things. It seems there is a law which says it is illegal to try to avoid the \$10,000.00 reporting amount. I even admitted to the FBI and IRS that I was trying to avoid it so it would be hard for Apple to find my money if they ever came after me, and no one ever told me this was illegal.

Near the end of the year in which I started making money, I hired a secretary to type into my computer all the receipts and information I had accumulated in the past few years. After a few months I found she had written a check to her self for \$800.00 and had forged my name, so I asked her to leave. I later looked at what she had been typing into the computer and found it was mostly garbage. She was in pre-law at the University of Cincinnati and even though she took the job, she didn't like being a lowly secretary. Since I had to start over and it would be too late to file income tax for that year, I decided to put it off until the next year. Around the middle of the next year I hired another secretary to retype the information into the computer. She was running a little late so I filed for an extension on my taxes. Before the extension was up I was raided by the FBI and the IRS, who didn't know I'd filed an extension. After they looked it up they told my attorney that the \$1000.00 I had put on the extension form, indicated that I was planning on paying only \$1000.00 in taxes. This is ridiculous. I hadn't filed income tax for quite a few years, and had no idea of what I was going to have to pay. You just have to put something down anyway.

I had hundreds of thousands of dollars going through my checking account, and I'm going to try to claim I'm only going to owe \$1000.00. As the joke goes I may be stupid, but I'm not crazy, or am I. If I was ever audited, which I sure would have been, after not having filed for so many years, they would surely ask for my bank statements, which would show this. And I don't really believe any rational person could believe this. But again they didn't charge me with income evasion. And too many people, whom the IRS talked too, also knew I was trying to bring my taxes up to date. (E.g., My ex-wife, my secretary, my daughters, my father, etc.) Why don't they just come out and say that everything you do with money, has to be reported to the Federal Government, whether you pay taxes on it or not. And let everyone know it. What happened to the constitution, and things like right to privacy etc. They can now stop cars, and search them without reason or suspicion. I guess the homes are next. And with what they did with the CNN tapes, it looks like it's not far off. Of course in that case they had to give the tapes back because they created too much of a ruckus doing it, and CNN is pretty big and powerful also.

In reality I had more money than I knew what to do with. I was giving it away by the handfuls. While I was in Tijuana, Mexico, across the border from San Diego, I gave away over \$10,000.00 to skinny poor people on the street. At my bank I overheard the teller ask an old man if he was sure he could live for the next week on the \$7.25 he had left. And here I was cashing a check for over \$7,000.00. So on the way out I took a handful of \$100.00 bills and stuffed them into his shirt pocket, and said Merry Christmas, even though it was in the middle of the Summer. I didn't know what else to say. I gave away so much I really can't remember where it all went. I bought all my kids new bedroom sets, while I slept on a stack of old mattresses, using an old busted dresser, I've since thrown away. And the FBI knows all this to be true. Even with all the money I was mostly depressed, and really didn't want much except a better computer which I bought. If I tried to do some electronic design it seemed to bring to mind my past failures, and I got really nervous and shaky for some reason, and couldn't wait to quit. I tried learning to fly, and bought an old plane because I was told that most small plane manufacturers were going out of the business, which would make small planes more valuable. But I soon got bored with flying and didn't even finish my license. It was funny when my ex-wife told me that the FBI had asked her if I took trips out of the country with my plane. I guess in their eyes, everyone who breaks the law is into drugs. Even in my home they thought a bag of plaster of Paris from one of my kid's hobby sets was some kind of drug. In reality I was afraid to fly my plane without an instructor. After over 50 hours, I could take off and fly it but I don't land too well. I guess I'll never be a pilot.

The guns I bought turned out to be a bad idea because of the stigma surrounding any type of weapon. I didn't know anything about guns. But when I saw on the news that they had put a ban on any more imports of certain kinds of guns, and later my brother talked me into going to a Bill Goodman gun and knife show, I realized that they were sure to go up in value. And it turned out as I expected. The guns I bought are now worth over three times what I paid for them. And they were all legally registered, with \$200.00 sent to the US government for each, with all the fingerprints, waivers signed by the local sheriff and 90 day investigation done properly. But they didn't charge me with illegal guns. They just took them because I bought them with illegally gained money. And every report has mention of them. I also had a VCR, and a TV, but no one mentioned them. If they mention you have things as money, guns, or airplanes it helps them make you look more like a gangster or something else bad. In advertising it's called sensationalism. It's using anything that gets

a reaction from Joe public to achieve your goal.

Most of my days were spent on the phone helping people learn to use Apple software, since that was the only thing I still seemed to enjoy. I guess the feeling that you get when you help someone learn something is the only enjoyment I could still get. I spent my days helping the people Apple should have been helping, and they put me in jail. Boy, that's a kick in the teeth. I've tried to get help from Apple myself. If the phones not busy, and you get through to someone, they assume you are an idiot, and rush you off the phone as fast as they can. In my case, I find I know more than most of the people I talk too.

Today no one knows the rules, and everyone is afraid to say anything. I asked an attorney recently if the way I was selling a computer scanner could be against the law, and he told me that if I thought it might be against the law he didn't want to know about it. I had a meeting with the FBI, where I was questioned about consulting with many attorneys concerning any trouble I could get into for violating Apples copyright. When the question came up, my attorney quickly announced that he had told me he didn't know the law concerning copyright violations, as if he was defending himself. I talked with three attorneys to find out if they could help me with this case, and was told the FBI and the IRS are so powerful that unless I still have lots of money, or am squeaky clean I couldn't win. One of the FBI or IRS agents told me they have a 97.8 percent conviction rate, which I guess means I'm to assume is because they are proficient in getting the real facts and evidence. From all the inaccurate information I've seen them using, I find this hard to accept. When they came to search my home, they ran me off the road in a junk car that looked as if it had a bunch of gangsters in it. Then yanked my 11 year old daughter out of the car hurting her arm. Not seriously, however. They appeared to be excited because their plans of catching me at home were foiled by me taking my daughter to her ice skating class. I guess they have procedures, and were only doing their job the way they were trained. I can't fault them with that. I'm sure they didn't know what to expect. I own guns, so I guess I could have been a crazy. Actually I've only shot one of them once, on a farm. They make too much noise, and you can't hit what you are aiming at. The other ones I had reconditioned, so they would be attractive to, collectors, and dealers. And I don't mean drug dealers.

They served me with a search and seizure warrant filled with manufactured evidence. By whom I'm not sure. Most paragraphs ended with a statement that quote "The information provided has been proved to be accurate and reliable by independent investigation." And since most, were statements that I supposedly had made, how do you prove them reliable unless someone else was standing there at the time, which they weren't. Also for me to have supposedly walked up to a bank manager and say I want to structure my transactions to avoid paying income tax would really be insane. And, as I mentioned they denied it. There are also many things which have been done, which are obviously illegal, but to mention them would put individuals within the system in bad light, which is not what I'm trying to do here.

I'm sorry if it appears that I'm trying to excuse my actions by attacking the system which is charged to uphold the law. But they have exaggerated, maybe even fabricated, and used whatever necessary to prosecute me, for laws that most people don't know exist, and probably couldn't understand if they read them, so I feel I have the right to bring it all out. Obviously I can't blame anyone for what I did. No one twisted my arm. It's just that they have a law for almost everything you do, and

everyone is afraid to stand up against the system. Even the people within the system. They tried it in the 60s, and lost. And they keep passing more laws. I'm waiting for them to attach a 25 year law to jaywalking. The way the laws are worded I bet, if you made any money doing it, they could find a way. And the law they used was obviously passed to be used against drug dealers. Every other paragraph says something about drugs.

The only thing I know about drugs is what I see on television. I tried marijuana once in the early 60s but I don't like the feeling of losing control of my faculties. I won't even have more than one drink when I eat out. And lately with the laws the way they are, I'm afraid to have even the one. It really upsets me to think that, so many people, are so dissatisfied with their life that they need to use substances to escape from the realities. With all the pressures I've been under lately it would be so tempting to want to escape. I realize it may help me escape, but it makes life harder on those around me who are trying to deal the best they can with life which is tough enough.

Now I'm being forced to help go after and prosecute other people who don't even know they are breaking the law, and are also not really hurting anyone. I'm being asked to help convict xxxxxx. Heck, I hear Apple didn't even know they weren't real until they busted one open xxxxxxxx and I never talked about it. I'm not saying this to help xxxxx. It's a shame, but he doesn't realize that, if you get their attention, they're going to get you. They decide if you broke the law or not. The FBI is getting everyone these days. I saw the other day on the news, where they walked into a hotel room and took tapes from CNN, without even a search warrant. No wonder we get along with the USSR so well these days. There doesn't appear to be much difference between the FBI and the KGB, except that I don't believe the FBI beats people. Of course I'm not sure the KGB does anymore either. But it's possible that I'm wrong on both counts. This I find very distasteful, but if I don't help them I'll get more charges, which affects my family.

We seem to be trying to clear up all the crime in the world, with a big fervor. What will we have, if we ever accomplish it. For one thing many unemployed attorneys, agents, and judges. We'll all drive the same kind of car, because to think or be different from the next guy will be a crime. As people begin obeying most of the heavy laws, we will start charging people with looking funny, so the attorneys, and law enforcers can hold on to their jobs. First we will build more jails to hold all the violators, until half the population is in jail. Then as they start to obey all rules we will make up things that people are doing wrong. Eventually we will be the robots that the futuristic movies talk about. Sounds ridiculous doesn't it. The Germans were almost able to do it with the Jews, but if history tells us anything, eventually the people are going to be upset.

I made some mistakes, and I'm not really blaming anyone. I didn't know copyright violation was so serious, and the rest are just laws created for one thing then used for another, because they feel I was probably going to cheat on my taxes. But that is the way the chips fell, and I'll take my punishment, and try again for the forth time. I often wonder if I'm not really crazy, to keep trying when the obstacles are stacked so high. They say a new business has a one in 3000 chance of making it. And their definition of making it is that they just continue to stay in business. I bet the odds against making a profit are even higher. For me, now it will be even harder. I have a credit record that looks as if a bomb dropped on it, and now I'm a felon. Well, only about 20 years left and I'll be too old to try. But again my grandfather was a millionaire, lost it all

betting on the ponies, as he called it, and at 98 he was still trying to get back to where he was. I don't know if I can take another 40 years of this.

E N D O F S T A T E M E N T

The above was a statement prepared by D. Hayes to be read to the Judge at the conclusion of Hayes' trial and sentencing.

Part II of this article will appear next week, in it, the actual charges levied against D. Hayes are detailed and explained.

> STR Portfolio News & Informationâ ¢
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Keeping up to date...

CTSY CIS

HYPERLIST FOR PORTFOLIO PALMTOP =====

HyperList, a software "idea processor" for the Atari palmtop personal computer, allows users to log and categorize pieces of information into an MS-DOS (R)-uploadable format, anytime, anywhere.

"This packages is a "must have' for anyone who gathers, categorizes and prioritizes personal and professional information and data on a daily basis," said Sam Tramiel, Atari Corporation CEO. "HyperList enables the user to turn scattered bits and pieces of information into something that is organized and useful. And, because it runs on the Portfolio, data can be accessed whenever and wherever it's needed," he said.

Using the new package, Portfolio users can take simple lists and turn them into hierarchial sublists or "HyperLists." For example, salespeople can keep lists of clients and sublists of action items under each of those clients.

Lists and sublists are displayed in simple outline format, but they are really much more; they provide a comprehensive means of creating,

arranging, manipulating, storing and reading HyperLists.

HyperList differentiates itself from comparable "outliner" programs on the market in several ways. First and most importantly, HyperList was developed for the Atari Portfolio--ensuring that personal organization is not restricted to the confines of a desktop personal computer.

HyperList also displays information in an exceptionally clear and concise format. Sublevels are shown individually, rather than in a multiple level format. This provides for a simple and orderly view which is especially easy-to-read on the 40-character x 8-line screen of the palmtop computer. In addition, sublists are flush left, rather than tabbed to the right, keeping the number of lines to a minimum.

Introduced in April 1989, the Atari Computer Portfolio was the industry's first MS-DOS 2.11 command-compatible palmtop personal computer. Small enough to slip into a suitcoat pocket, this one-pound powerhouse includes five internal software packages, 128K RAM and LCD display.

HyperList will be available in January for a suggested list price of \$49.95. The portfolio is available immediately with a suggested list of \$299.00 package" is a computer that's within everyone's reach.

Market Outlook

According to IDG, Input and Dataquest (independent research firms), the market for laptop computers will double to nearly \$6 billion over the next three years. This growth is attributed to the number of people who intend to add laptops as second computers.

By being first to market with the palmtop personal computer, and offering key software and peripherals, Atari Computer is positioned for leadership in the pocket-sized portable niche market.

The Portfolio, including a PC Card Drive and a 128K RAM card has a suggested U.S. retail of \$499.95. An optional AC Adapter lists for \$9.95. The Serial Interface is \$79.95 and the Parallel Interface is \$49.95. Additional Memory cards are 32K, \$79.95, 64K, \$129.95 and 128K, \$199.95. The Finance Card has a suggested retail of \$89.95. The DOS Utilities Card retails for \$89.95 and the HyperList retails for \$49.94. The leather carrying case for the Portfolio is available at a suggested retail of \$39.95. All are available for immediate delivery from Atari authorized dealers across the country.

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STACY SUCCESSOR TO BE MAHVALOUS!

The NEW Atari "Laptop" will be an exercise in perfection. The unit will be the latest Atari technology including the latest TOS. It will not however, be in the STe family. It will have a battery and its supposed to last at least 2+ hrs. The new unit is alleged to be somewhat smaller in bulk and weight than the current laptop.

- Sunnyvale, CA

"BLACK FRIDAY" RUMORS ABOUND!

At this point in time, that's all they are.... Rumors!! Rumors that more than just a few folks are "laid off" at Atari. Rumors that the "so-called cryptograms" alluded to by a few 'less informed' colleagues are now about to come to pass. Atari was called for either verification or clarification and unfortunately, STReport found that the majority of folks were unavailable for comment (vacations, home for the holidays etc.). STReport did however, manage to reach two responsible, well informed folks from Atari who emphasized that this, the latest in a long line of unfounded rumors, like the Stumph Rumor, is totally just that ..a rumor and a bad one at that.

- Sunnyvale, CA

2 DEALERS TO LOSE AUTHORIZATION!

The names of the dealers have been withheld pending notification of revocation, but this much is known; Dealer "A" in California, has been selling TOS in EPROM chips and has made claims of "exclusivity" in distribution of certain software when it was proven to not be the case. Dealer "B" in Michigan, has been selling TOS in EPROM chips among other complaints in a list provided by Atarians in the area. STReport applauds Atari for having taken definitive steps in correcting one of the most serious of problems... Dealers who constantly abuse their loyal Atari customers and thus, give all Atari Dealers a "black eye". There is much more to this story that will remain untold unless revealed by the dealers in question. Time will tell.

- Rockford, IL

ICD RUMORED TO BE DEVELOPING AN 030 UPGRADE

ICD Inc. long on the cutting edge of innovative hardware and software designed to fully support the Atari ST platform is rumored to be heavily engaged in the development of its own 68030 upgrade for ST computer owners. ICD, while enjoying an excellent reputation for the quality of its host adapters that opened the world of hard drives to ST owners, has also recently introduced AdSpeed. AdSpeed is ICD's latest entry into the Atari marketplace and has literally taken the market by storm. ICD's AdSpeed has gained widespread acceptance in the 16Mhz accellerator field because it is fully compatible with one of the most popular artwork programs, Spectrum 512 and other programs like Quantum Paint, F-Copy 3, The ProCopy Series and Cue Base in the midi field. ICD's Hard Drive Utility soft-ware, Cleanup and the software for use with the ICD Tape Backup have

only amplified the reliability of ICD's R&D. All their offerings to the ST community have been enthusiastically accepted.

For further Information contact:

ICD Incorporated
1220 Rock Street
Rockford, IL 61101
(815) 968-2228 Information
(815) 968-6888 FAX

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